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that finality is premature. In response to the rejections, certain claims have been amended to more distinctly claim the invention. The Applicants respectfully submit that the amendments to the claims are supported by the originally filed application.

Regarding Finality of Office Action

The Patent Office introduced a new ground of rejection in the Final Office Action that was not necessitated by the Applicants' Amendment filed March 12, 2002.

First, the First Office Action was mailed on December 6, 2001 and MacKenzie issued on March 26, 2002. Because of its later issue date, MacKenzie was not available as a reference and could not have been cited in the First Office Action. The Applicants' Amendment, therefore did not necessitate the citation of MacKenzie. MacKenzie is simply a newly citeable reference. Any delay in citing MacKenzie was not due to any action of the Applicants. As such, the finality of the outstanding Office Action is improper.

Furthermore, in the Applicants' Amendment, filed March 12, 2002, Applicants amended Claims 1-5, and added new Claims 6-21. The single substantive change accomplished by this Amendment was the replacement of the text "interfacing" with the text "defining" in the Claim 1 and the replacement of the text "interfaces" with the text "defines" in Claim 5. Other than these text replacements, no substantive additions were made to any claim.

No new issues under 35 U.S.C. § 102(e) could have been raised by the Applicants' Amendment. Specifically, any reasons associated with MacKenzie that would render the examined claims obvious would likewise have rendered the previous claims obvious, because all limitations present in pending Claims 1-21 were also present in the claims at the time of filing. In fact, the details of the Office Action assert that MacKenzie teaches certain limitations, all of which were previously recited in the claims. The Office Action does not rely on the amended wording of the claims in citing MacKenzie. Accordingly, the new ground of rejection relied upon by the Patent Office could not have been necessitated by the Applicants' Amendment to the claims.

Thus, the Applicants respectfully request that the finality of the Office Action be reconsidered and withdrawn and that consideration of the remainder of this Amendment not be restricted by after-final practice.

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Regarding Rejections under 35 U.S.C. § 102(e)

The Applicants respectfully submit that the claims are not anticipated by MacKenzie.

The Applicants describe and claim a technique for establishing membership of a node in a network cluster. A shareable storage device is defined to store data for a network. Membership in a network cluster is always granted to a node if the node has access to the shareable storage device. This permits a single node to form a cluster.

MacKenzie discusses a method and apparatus to monitor and repair partitions within a cluster. Resolution of cluster partitions is performed using a shared resource that stores information about the members of the cluster. When a node attempts to join a cluster, a determination is made as to whether there is a partition error associated with the node by comparing its CSM (its membership data) with its NIB (its heartbeat data). Once the CSM and NIB data are compared, the existing cluster members determine whether the new node will become a member. That is, the current members perform any authority/approval processing normally employed in clustered computer systems. (MacKenzie, col. 17, ll. 41-43.)

Applicants' claim a technique for implementing a quorumless cluster. Conventional clusters use a quorum to resolve partition problems. As a result, a cluster comprising fewer than a quorum of nodes is forced to cease operation even though the cluster was operating effectively with the reduced number of nodes. (*See* page 3, lines 19-26 of the specification.) Instead of requiring a quorum of nodes, the Applicants advantageously base cluster membership exclusively on a node's ability to access a shareable storage device.

As set forth in Claims 1, 5, 19 and 21, the claimed invention requires that membership is always granted in a network cluster to a node if the node has access to the shareable storage device. Similarly, Claims 4 and 20 recite "a manager mechanism to always grant membership in the network cluster to the node exclusively based on the node having access to the storage device." This technique is neither disclosed nor suggested by MacKenzie.

Rather, MacKenzie discusses a method and apparatus for monitoring and repairing partitions in a cluster using a majority of nodes. As such, MacKenzie suffers from exactly the types of problems that the Applicants' invention seeks to resolve.

In particular, MacKenzie uses node voting to determine membership in a cluster. MacKenzie attempts to resolve network partitions by allowing the member nodes to control membership to a cluster. In addition, MacKenzie practices that before a node can join the

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clustered computer system the member nodes must make an independent determination as to whether there is a partition error associated with the new node. (MacKenzie, col. 17, ll. 41-43.) As such, MacKenzie teaches that the current members of a cluster must approve a node's membership and that membership is based on a majority vote of nodes.

Thus, MacKenzie's approach is contrary to Applicants' claimed invention, in that the Applicants' claim a technique that avoids voting issues, in particular the quorum requirement. That is, the Applicants' claimed invention always grants membership to nodes exclusively based on whether they can access the shared resource, and thus, there is no need for node voting. Indeed the claimed invention does not require that member nodes already exist. MacKenzie cannot grant membership to a node if there are no existing member nodes to vote. MacKenzie, therefore, cannot form a single node cluster.

The Applicants further respectfully submit that MacKenzie teaches away from the claimed invention. MacKenzie teaches that nodes associated with an error that have access to the shareable storage may not be members of the cluster. Specifically, MacKenzie specifies that even if a node has access to the storage, the node's membership can be revoked when the node is associated with an error. For example, a node's membership will be revoked if the node is associated with a partition, such that the node is "delayed in handling a node or network failure indication." (MacKenzie, col. 13, ll. 32-36.) Thus, a member node that has access to the shared storage device may loose its membership when that member node is associated with a partition. (MacKenzie, col. 12, ll. 41-59.)

That is, MacKenzie teaches that when a cluster node fails, membership is relinquished to protect the integrity of the data on the shared storage even if the cluster node has access to the shared storage. (MacKenzie, col. 4, ll. 58-60; Abstract.) Thus, MacKenzie teaches away from the claimed invention by removing nodes from cluster membership, even if the nodes can actually access the shared disk.

Reconsideration of the rejections of Claims 1, 4, 5, and 19-21 under 35 U.S.C. §102(e) is respectfully requested.

Regarding Dependent Claims

Claims 2, 3, and 6-8 depend from base Claim 1; Claims 9-13 depend from base Claim 4; and Claims 14-18 depend from base Claim 5. All dependent claims have been rejected under 35

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U.S.C. § 102(e). As the dependent claims incorporate all limitations from the corresponding base claims, allowance of the dependent claims follows from allowance of the base claims. Because the base claims are believed to be in condition for allowance, the dependent claims should also be allowed.

Reconsideration of the rejections of Claims 2, 3, 6-8, 9-13, and 14-18 under 35 U.S.C. §102(e) is respectfully requested.

Regarding Declaration under 37 C.F.R. § 1.131

The MacKenzie reference was filed January 19, 1999, and the Applicants' invention was filed on May 38, 1999. The Applicants' invention conception date was prior to January 19, 1999. Thus, the Applicants may file a Declaration under 37 C.F.R. §1 131 to swear behind MacKenzie, if necessary. To the extent that the Examiner has additional reasons to reject the claims, the Applicants respectfully request that these reasons be made of record.

CONCLUSION AND REQUEST FOR INTERVIEW

In light of the foregoing amendments and remarks, it is respectfully requested that all Claims (Claims 1-21) be allowed so the application may be passed to issuance. If the Examiner finds that the amended claims do not place the application in condition for allowance, the Applicants' attorney respectfully requests a telephone interview to discuss the remaining issues. To schedule an interview, or for any other reason that may expedite prosecution of the application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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MARKED UP VERSION OF AMENDMENTS

Claim Amendments Under 37 C.F.R. § 1.121(c)(1)(ii)

1.   (Twice Amended) A method for managing membership of nodes in a computer network cluster, the method comprising:

defining a shareable storage device to store data for a network; and

always granting membership in a network cluster to a node[,] if the node has access to the shareable storage device.

4.   (Twice Amended) A system for managing membership of nodes in a computer network cluster, comprising:

a network infrastructure for supporting a plurality of nodes in a network cluster;

a storage device separated from the network infrastructure and interconnectable to a plurality of nodes;

a node interconnected with the storage device; and

a manager mechanism to always grant membership in the network cluster to the node exclusively based on the node having access to the storage device.

5.   (Twice Amended) A computer program product for managing membership of nodes in a computer network cluster, the computer program product comprising a computer usable medium having computer readable code thereon, including program code that:

defines a shareable storage device to store data for a network cluster; and

always grants membership in the network cluster to a node[,] if the node has access to the shareable storage device.

15.   (Amended) The computer program product of Claim 14 further comprises program code that:

ceases operation of the network cluster if no node has access to the sharea[g]ble storage device.

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19. (Amended) A method for managing membership of nodes in a computer network cluster, the method comprising:

defining a shareable storage device to store data for a network;

creating a message location on the shareable storage device; and

<u>always</u> granting membership in a network cluster to a node[,] if the node has access to the shareable storage device, using the message location.

20. (Amended) A system for managing membership of nodes in a computer network cluster, comprising:

a network infrastructure for supporting a plurality of nodes in a network cluster;

a storage device separated from the network infrastructure and interconnectable to a plurality of nodes;

a message location on the shareable storage device;

a node interconnected with the storage device; and

a manager mechanism to <u>always</u> grant membership in the network cluster to the node <u>exclusively</u> based on the node having access to the storage device, using the message location.

21. (Amended) A computer program product for managing membership of nodes in a computer network cluster, the computer program product comprising a computer usable medium having computer readable code thereon, including program code that:

defines a shareable storage device to store data for a network cluster;

creates a message location on the shareable storage device; and

uses the message location to <u>always</u> grant membership in the network cluster to a node[,] if the node has access to the shareable storage device.

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